Stream Extraction Operator >>

```
while( inFile >> number )  is rewritten as
while( inFile.operator>>( number ) )  which returns
while( inFile )  which is rewritten as
while( inFile.operator bool() )  which is the same as
while( !inFile.fail() )
```

```
while( inFile >> number )
    cout << number << endl;

while( true )
{
    inFile >> number;
    if( inFile.fail() )
        break;
    cout << number << endl;
}

inFile >> number;
while( !inFile.fail() )
{
    cout << number << endl;
    inFile >> number;
}

while( !inFile.fail() )
{
    inFile >> number;
    cout << number << endl;
}
```

inFile.good()	true
inFile.eof()	false
inFile.fail()	false
inFile.bad()	false

1	2	\n	3	4	\n	5	6	\n

12

12

12

12

Output

```
12\n
34\n
56\n
```

File

```cpp
while( inFile >> number )
    cout << number << endl;

while( true )
{
    inFile >> number;
    if( inFile.fail() )
        break;
    cout << number << endl;
}

inFile >> number;
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1	2	\n	3	4	\n	5	6	\n

12
34

12
34

12
34

12
34

Output

12\n
34\n
56\n

File

```cpp
while( inFile >> number )
    cout << number << endl;

while( true )
{
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1	2	\n	3	4	\n	5	6	\n

12
34
56

12
34
56

12
34
56

12
34
56

Output

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34\n
56\n

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    cout << number << endl;
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{
    inFile >> number;
    cout << number << endl;
}
```

12
34
56

12
34
56

12
34
56

12
34
56
56

Output

inFile.good()	false
inFile.eof()	true
inFile.fail()	true
inFile.bad()	false

1	2	\n	3	4	\n	5	6	\n

```
12\n
34\n
56\n
```

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12

12

12

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1	2	\n	3	4	\n	5	6	\n

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Output boxes:

```
12
34
```

```
12
34
```

```
12
34
```

```
12
34
```

Output

```
12\n
34\n
56\n
```

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```
12
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12
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Output

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12
34
56
```

```
12
34
56
```

```
12
34
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12
34
56
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File

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12\n
34\n
56
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34
56
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```
12
34
56
```

```
12
34
56
```

```
12
34
56
56
```

Output

```
12\n
34\n
56
```

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34
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Output

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56
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```

Output boxes:

```
12
34
56
```

```
12
34
```

```
12
34
```

```
12
34
56
```

Output

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1	2	\n	3	4	\n	5	6	

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12\n
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inFile.bad()	false

a	b	\n	c	d	\n	e	f	\n

ab

ab

ab

ab

Output

ab\n
cd\n
ef\n

File

```cpp
while( inFile >> str )
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    inFile >> str;
    cout << str << endl;
}
```

ab
cd

ab
cd

ab
cd

ab
cd

Output

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a	b	\n	c	d	\n	e	f	\n

ab\n
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```

ab
cd
ef

ab
cd
ef

ab
cd
ef

ab
cd
ef

Output

inFile.good()	true
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a	b	\n	c	d	\n	e	f	\n

ab\n
cd\n
ef\n

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```

ab
cd
ef

ab
cd
ef

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a	b	\n	c	d	\n	e	f	\n

ab
cd
ef

ab\n
cd\n
ef\n

File

ab
cd
ef

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ab

ab

ab

ab

Output

ab\n
cd\n
ef\n

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a	b	\n	c	d	\n	e	f	\n

Output

ab
cd

ab
cd

ab
cd

ab
cd

ab\n
cd\n
ef\n

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a	b	\n	c	d	\n	e	f	\n

ab
cd
ef

ab
cd
ef

ab
cd
ef

ab
cd
ef

Output

ab\n
cd\n
ef\n

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}
```

ab
cd
ef

ab
cd
ef

ab
cd
ef

ab
cd
ef

Output

inFile.good()	false
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a	b	\n	c	d	\n	e	f	\n

ab\n
cd\n
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a	b	\n	c	d	\n	e	f	

Output:

ab

ab

ab

ab

File:

ab\n
cd\n
ef

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ab
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}
```

ab
cd
ef

ab
cd
ef

ab
cd
ef

ab
cd
ef

Output

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ef

ab
cd
ef

ab
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```

ab

ab

ab

ab

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a	b	\n	c	d	\n	e	f	

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ab\n
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while( !inFile.eof() )
{
    inFile >> str;
    cout << str << endl;
}
```

ab
cd

ab
cd

ab
cd

ab
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Output

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ab\n
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ef

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}
```

ab
cd
ef

ab
cd

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a	b	\n	c	d	\n	e	f	

ab
cd

ab\n
cd\n
ef

File

ab
cd
ef

Output

getline()

```cpp
while( inFile.getline( str, 4 ) )
    cout << str << endl;


while( true )
{
    inFile.getline( str, 4 );
    if( inFile.fail() )
        break;
    cout << str << endl;
}


inFile.getline( str, 4 );
while( !inFile.fail() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}


while( !inFile.fail() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

ab

ab

ab

ab

inFile.good()	true
inFile.eof()	false
inFile.fail()	false
inFile.bad()	false

a	b	\n	c	d	\n	e	f	\n

ab\n
cd\n
ef\n

File

Output

```
while( inFile.getline( str, 4 ) )
    cout << str << endl;

while( true )
{
    inFile.getline( str, 4 );
    if( inFile.fail() )
        break;
    cout << str << endl;
}

inFile.getline( str, 4 );
while( !inFile.fail() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}

while( !inFile.fail() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

inFile.good()	true
inFile.eof()	false
inFile.fail()	false
inFile.bad()	false

a	b	\n	c	d	\n	e	f	\n

ab
cd

ab
cd

ab
cd

ab
cd

Output

ab\n
cd\n
ef\n

File

```cpp
while( inFile.getline( str, 4 ) )
    cout << str << endl;

while( true )
{
    inFile.getline( str, 4 );
    if( inFile.fail() )
        break;
    cout << str << endl;
}

inFile.getline( str, 4 );
while( !inFile.fail() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}

while( !inFile.fail() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

ab
cd
ef

inFile.good()	true
inFile.eof()	false
inFile.fail()	false
inFile.bad()	false

ab
cd
ef

a	b	\n	c	d	\n	e	f	\n

ab
cd
ef

ab\n
cd\n
ef\n

ab
cd
ef

File

Output

```
while( inFile.getline( str, 4 ) )
    cout << str << endl;

while( true )
{
    inFile.getline( str, 4 );
    if( inFile.fail() )
        break;
    cout << str << endl;
}

inFile.getline( str, 4 );
while( !inFile.fail() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}

while( !inFile.fail() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

inFile.good()	false
inFile.eof()	true
inFile.fail()	true
inFile.bad()	false

a	b	\n	c	d	\n	e	f	\n

Output

ab
cd
ef

ab
cd
ef

ab
cd
ef

ab
cd
ef

File

ab\n
cd\n
ef\n

```
while( inFile.getline( str, 4 ) )
    cout << str << endl;

while( true )
{
    inFile.getline( str, 4 );
    if( inFile.eof() )
        break;
    cout << str << endl;
}

inFile.getline( str, 4 );
while( !inFile.eof() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}

while( !inFile.eof() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

ab

inFile.good()	true
inFile.eof()	false
inFile.fail()	false
inFile.bad()	false

ab

a	b	\n	c	d	\n	e	f	\n

ab

ab\n
cd\n
ef\n

File

ab

Output

```cpp
while( inFile.getline( str, 4 ) )
    cout << str << endl;


while( true )
{
    inFile.getline( str, 4 );
    if( inFile.eof() )
        break;
    cout << str << endl;
}


inFile.getline( str, 4 );
while( !inFile.eof() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}


while( !inFile.eof() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

ab
cd

inFile.good()	true
inFile.eof()	false
inFile.fail()	false
inFile.bad()	false

ab
cd

a	b	\n	c	d	\n	e	f	\n

ab
cd

ab\n
cd\n
ef\n

File

ab
cd

Output

```cpp
while( inFile.getline( str, 4 ) )
    cout << str << endl;

while( true )
{
    inFile.getline( str, 4 );
    if( inFile.eof() )
        break;
    cout << str << endl;
}

inFile.getline( str, 4 );
while( !inFile.eof() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}

while( !inFile.eof() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

Output:

```
ab
cd
ef
```

```
ab
cd
ef
```

```
ab
cd
ef
```

```
ab
cd
ef
```

inFile.good()	true
inFile.eof()	false
inFile.fail()	false
inFile.bad()	false

a	b	\n	c	d	\n	e	f	\n

```
ab\n
cd\n
ef\n
```

File

```cpp
while( inFile.getline( str, 4 ) )
    cout << str << endl;

while( true )
{
    inFile.getline( str, 4 );
    if( inFile.eof() )
        break;
    cout << str << endl;
}

inFile.getline( str, 4 );
while( !inFile.eof() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}

while( !inFile.eof() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

ab
cd
ef

ab
cd
ef

inFile.good()	false
inFile.eof()	true
inFile.fail()	true
inFile.bad()	false

a	b	\n	c	d	\n	e	f	\n

ab
cd
ef

ab\n
cd\n
ef\n

ab
cd
ef

File

Output

```cpp
while( inFile.getline( str, 4 ) )
    cout << str << endl;

while( true )
{
    inFile.getline( str, 4 );
    if( inFile.fail() )
        break;
    cout << str << endl;
}

inFile.getline( str, 4 );
while( !inFile.fail() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}

while( !inFile.fail() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

inFile.good()	true
inFile.eof()	false
inFile.fail()	false
inFile.bad()	false

a	b	\n	c	d	\n	e	f	

Output boxes:

ab

ab

ab

ab

File:
```
ab\n
cd\n
ef
```

File

Output

```cpp
while( inFile.getline( str, 4 ) )
    cout << str << endl;

while( true )
{
    inFile.getline( str, 4 );
    if( inFile.fail() )
        break;
    cout << str << endl;
}

inFile.getline( str, 4 );
while( !inFile.fail() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}

while( !inFile.fail() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

inFile.good()	true
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inFile.fail()	false
inFile.bad()	false

a	b	\n	c	d	\n	e	f	

Output

ab
cd

ab
cd

ab
cd

ab
cd

File

ab\n
cd\n
ef

```cpp
while( inFile.getline( str, 4 ) )
    cout << str << endl;

while( true )
{
    inFile.getline( str, 4 );
    if( inFile.fail() )
        break;
    cout << str << endl;
}

inFile.getline( str, 4 );
while( !inFile.fail() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}

while( !inFile.fail() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

inFile.good()	false
inFile.eof()	true
inFile.fail()	false
inFile.bad()	false

a	b	\n	c	d	\n	e	f	

Output

```
ab
cd
ef
```

```
ab
cd
ef
```

```
ab
cd
ef
```

```
ab
cd
ef
```

File

```
ab\n
cd\n
ef
```

```cpp
while( inFile.getline( str, 4 ) )
    cout << str << endl;

while( true )
{
    inFile.getline( str, 4 );
    if( inFile.fail() )
        break;
    cout << str << endl;
}

inFile.getline( str, 4 );
while( !inFile.fail() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}

while( !inFile.fail() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

inFile.good()	false
inFile.eof()	true
inFile.fail()	true
inFile.bad()	false

a	b	\n	c	d	\n	e	f	

Output:

```
ab
cd
ef
```

```
ab
cd
ef
```

```
ab
cd
ef
```

```
ab
cd
ef
```

File:

```
ab\n
cd\n
ef
```

```cpp
while( inFile.getline( str, 4 ) )
    cout << str << endl;

while( true )
{
    inFile.getline( str, 4 );
    if( inFile.eof() )
        break;
    cout << str << endl;
}

inFile.getline( str, 4 );
while( !inFile.eof() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}

while( !inFile.eof() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

ab

inFile.good()	true
inFile.eof()	false
inFile.fail()	false
inFile.bad()	false

ab

a	b	\n	c	d	\n	e	f	

ab

ab\n
cd\n
ef

File

ab

Output

```cpp
while( inFile.getline( str, 4 ) )
    cout << str << endl;

while( true )
{
    inFile.getline( str, 4 );
    if( inFile.eof() )
        break;
    cout << str << endl;
}

inFile.getline( str, 4 );
while( !inFile.eof() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}

while( !inFile.eof() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

inFile.good()	true
inFile.eof()	false
inFile.fail()	false
inFile.bad()	false

a	b	\n	c	d	\n	e	f	

```
ab
cd
```

```
ab
cd
```

```
ab
cd
```

```
ab
cd
```

Output

```
ab\n
cd\n
ef
```

File

```cpp
while( inFile.getline( str, 4 ) )
    cout << str << endl;

while( true )
{
    inFile.getline( str, 4 );
    if( inFile.eof() )
        break;
    cout << str << endl;
}

inFile.getline( str, 4 );
while( !inFile.eof() )
{
    cout << str << endl;
    inFile.getline( str, 4 );
}

while( !inFile.eof() )
{
    inFile.getline( str, 4 );
    cout << str << endl;
}
```

inFile.good()	false
inFile.eof()	true
inFile.fail()	false
inFile.bad()	false

a	b	\n	c	d	\n	e	f	

Output

```
ab
cd
ef
```

```
ab
cd
```

```
ab
cd
```

```
ab
cd
ef
```

```
ab\n
cd\n
ef
```

File

If the state of streambuf is good, and the first character in streambuf is not '\n', then after the execution of

- `inFile.getline`, '\n' is removed from streambuf if found,

- `inFile.getline`, the state of streambuf is set to fail if '\n' is not found,

- `inFile >>`, '\n' is not removed from streambuf.

If the state of streambuf is good, and the first character in streambuf is '\n', then the execution of

- `inFile.getline` removes '\n' from streambuf, reads an empty string and keeps the state good,

- `inFile >>` removes '\n' from streambuf, do correct read operation and keeps the state good.